USAID | SOUTH SUDAN
FROM THE AMERICAN PEOPLE

THE FOOD, AGRIBUSINESS AND RURAL MARKETS (FARM) PROJECT

Report on Marketing Activities in South Sudan's Agricultural Sector

Contract No. EDH-I-00-05-00005-00, T.O. No.16

DISCLAIMER
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

Abt Associates Inc. | 4550 Montgomery Avenue | Suite 800 North
Bethesda, Maryland 20814 | T. 301.347.5000 | F. 301.913.9061 | www.abtassociates.com

Table of Contents

ACRONYMS

AAHI	Action Africa Help International
CBSVD	Cassava Brown Streak Virus Disease
CES	Central Equatoria State
CMVD	Cassava Mosaic Virus Disease
COP	Chief of Party
COR	USAID Contracting Officer's Representative
DAP	Di-Ammonium Phosphate
DCA	Development Credit Authority
DCOP	Deputy Chief of Party
EES	Eastern Equatoria State
FaaB	Farming as a Business
FAO	United Nations Food and Agriculture Organization
FARM	Food, Agribusiness and Rural Markets Project
FBO	Farmer Based Organization
Feddan	Unit of area measuring 60m x 70m
GIS	Geographic Information System
GIZ	German Technical Cooperation
Ha	Unit of area measuring 100m x100m
IFDC	International Fertilizer Development Centre
IPM	Integrated Pest Management
IQC	Indefinite Quantity Contract
JICA	Japanese International Cooperation Agency
Kg	Kilogram (2.2 pounds)
MAFCRD	Ministry of Agriculture Forestry Cooperatives and Rural Development
MAFTARFCRD	Ministry of Agriculture Forestry Tourism Animal Resources, Fisheries Cooperatives and Rural Development
MT	Metric Ton (1,000 kg)
NEAT	National Effort for Agricultural Transformation
NGO	Non-Governmental Organization
NPA	Norwegian Peoples Aid
OFDT	On-Farm Demonstration Trial
P4P	Purchase for Progress (Program administered by World Food Program)
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PMP	Performance Management Plan
RAISE	Raising Rural and Agricultural Incomes with Sustainable Development
RSS	Republic of South Sudan
SRS	Sudan Radio Services
SSP	South Sudan Pound (Officially SSP3.05=US$1; Black Market rate SSP4=US$1)
ToT	Training of Trainers
USAID	United States Agency for International Development
USG	United States Government
VCA	Value Chain Analysis
WES	Western Equatoria State
WFP	World Food Program

1.0 SUMMARY

- Most farmers have access to markets. There are regular twice weekly markets in most towns along roads which are accessible to farmers by foot or bicycle.
- The farmers who live in more remote areas further than walking or bicycle distance down meandering pathways are always going to have difficulty accessing markets.
- Farmers are not always willing to sell at the market price and, through a lack of marketing knowledge, often seem to believe everyone is trying to cheat them, including the project.
- Feelings of being cheated are reinforced when agencies step in and buy grain for seed at a high price compared to the price offered by traders for grain for consumption.
- South Sudanese farmers apparently sell some grain at harvest to finance school fees. They store the balance of their grain until right before planting season when they sell it to finance farming activities and for incidental cash needs. Most farmers in rural areas produce sufficient food for their own needs. The main off-take market for surpluses is, therefore, in urban areas. Urban off-take, however, is not that large. As production increases there are going to be more problems absorbing surpluses of staple crops which come into the market at harvest and planting time. As more grain is produced the prevailing high prices will erode. A better strategy for commercially-oriented farmers would be to diversify into higher value and potentially exportable crops such as sesame, pigeon peas, cowpeas, etc.
- There are rural areas of the country with food shortages but generally the food insecure residents of these areas do not have the money to pay the already high food prices which are further exacerbated when limited volumes are moved into their markets with high transport costs.
- Labor costs in South Sudan appear to be considerably higher than in other areas of East Africa, significantly increasing production costs.
- The price differential between Ugandan maize markets and South Sudan markets appears to be around $95 – $120 per metric ton (implying a significant number of traders are not paying all the taxes charged at the border). If the South Sudanese price is higher than this, Ugandan maize comes into the urban markets. Therefore, the South Sudan price in local markets has to be lower than import parity (i.e. Ugandan price in urban center = South Sudan price plus transport to urban center plus small margin).
- Traders have limited cash available to buy from markets.

1.1 Marketing Activities

The FARM Project will work with cooperatives that are ready to market:

- Identify 5 - 7 farmer groups or cooperatives that are ready to market;
- Introduce scales at group storehouses and market places with the approval and support of local authorities.

- Introduce record keeping for marketing purposes, particularly to highlight trigger points for actions when the market is not performing as anticipated;
- Identify capable persons in each group and train them on marketing skills;
- Stage workshops for each group to draft simple marketing plans and assist the groups to implement them;
- Facilitate market linkages among traders and between traders and market managers of groups;
- Arrange group visits to already functioning marketing groups, such as the Bala and Loketa groups.
- Arrange a trip to Kaporchowa Commercial Farmers Association in Mbale, Uganda, to expose South Sudanese progressive farmers to market-ready groups. This is an example of how an enterprising farmers group can take advantage of additional land for small scale commercial development:
- Every two weeks check market prices and transport rates between markets and communicate these rates to farmers;
- Work with local authorities to develop market place committees made up of traders, farmer group representatives, and local authority personnel whose roles are to ensure good management of market place;
- Develop short-term and realistic marketplace development plans (i.e. install scales and assign scale operators);
- Coordinate with local government authorities to allocate tax revenue collected from market sellers to clean markets and remove trash, and to make small investments in market infrastructure such as storehouses.

1.2 Additional Marketing Supports

Activities which may be worked on, staff and logistics permitting:

- Build capacity of local governments to calibrate and certify scales;
- Conduct a transport survey to understand whether transport rates are a reflection of poor infrastructure and small volumes or an indication of monopolistic behavior;
- Conduct a trade flow study to map volumes moving into markets from points in the region, noting time taken for volumes to move through markets either through consumption outlets or to other markets.

1.3 Policy Development Support

Activities which would support Ministry of Agriculture, Forestry, Tourism, Animal Resources, Fisheries, Cooperatives and Rural Development (MAFTARFCRD) to develop of policies:

- Conduct a study of food consumption in both urban and rural areas. Without knowing more about local diets, preferences, and trends, it is impossible to give advice on where investments in productivity should be made or which commodities have the highest market potential;

- Conduct a labor study. The shortage of casual labor is a significant constraint on increasing the area of cultivated land. The high cost of labor makes South Sudanese production costs among the highest in the region. When surpluses above national consumption are achieved, the commodities will have no market unless their price drops by more than $120/metric ton and more.

2.0 INTRODUCTION

The USAID Food, Agribusiness and Rural Markets (FARM) Project is a component of the U.S. Government Greenbelt Initiative program in South Sudan and is funded through the RAISE Plus IQC (Raising Rural and Agricultural Incomes with a Sustainable Environment Indefinite Quantity Contract). The FARM Project contributes to the goals of the Republic of South Sudan (RSS) of achieving food self-sufficiency, reducing poverty, and promoting economic growth by increasing food production in targeted areas.

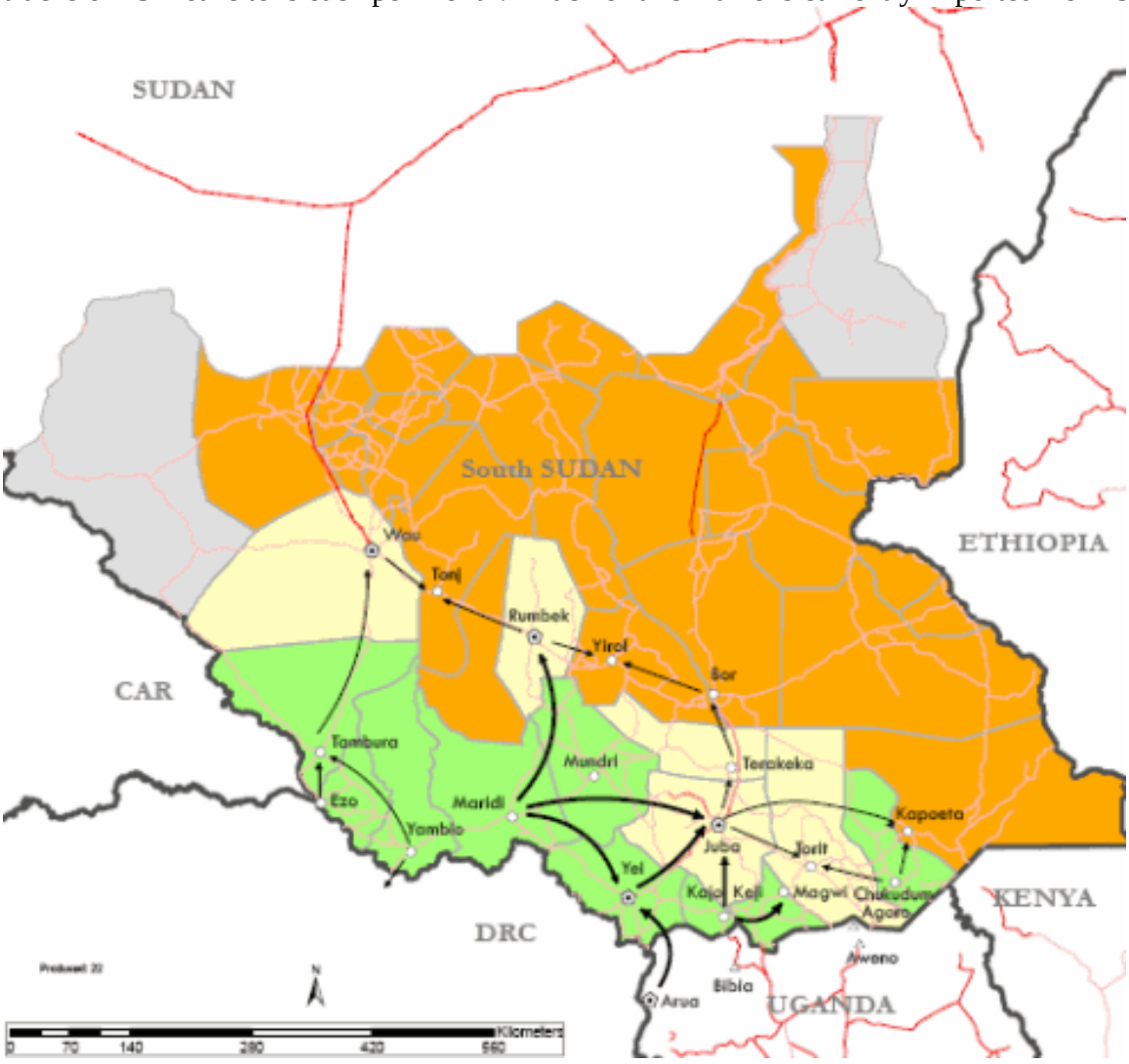
The Project is designed to increase agricultural productivity in selected commodities; increase trade; and improve the capacity of producers, private sector, and public sector actors in South Sudan to develop commercial smallholder agriculture. The project promotes economic growth to reduce poverty and food insecurity by improving the efficiencies of staple food value chains in which large numbers of smallholders participate. FARM is investing in market access, smallholder productivity, and other interventions that address the constraints at various points along selected value chains. The FARM Program has focused on the three states of Western, Central, and Eastern Equatoria, areas of great agricultural potential in which decades of conflict have destroyed much of the agricultural production capacity.

Most of FARM's work during the first half of the project focused on agriculture production in the following value chains: maize, sorghum, groundnuts, and cassava. The main interventions have included improved seed distribution, training in agronomy, land reclamation and preparation, post-harvest storage, and the development of Farmer-Based Organizations (FBOs). FARM technicians expect production gains will soon yield significant surplus harvests, therefore, The FARM Project over the past year has made the development of markets for smallholder farmers an emphasized priority.

An expert in agricultural market development carried out a short-term technical assistance assignment for FARM earlier this year. This report follows from her assignment.

3.0 TRADE IN SOUTH SUDAN

The following map shows the trade flow of maize which is similar to that of sorghum and groundnuts. The Greenbelt Region of the Equatorias produces surpluses which compete with Uganda surpluses in food deficit areas. The primary deficit areas are urban centers such as Juba which pull in significant quantities to feed their populations. For instance, based on a quick assessment of Juba-based FARM staff, urban people eat around 100 kg of maize per person per year. If we accept the generally reported figure of 400,000 as the population of Juba, then maize consumption in this urban area is around 40,000 metric tons per year, the equivalent of 133 trucks of 25 metric tons each per month. Much of this maize is currently imported from Uganda.



Source FEWSNET

While the distances between urban centers in kilometers are not excessive, road conditions are poor. Traveling the 120 kilometers between Yei and Juba by four-wheel drive vehicle during the dry season takes 5 hours; the trip is even longer by truck. Traveling from Yei to Morobo in a four-wheel drive, around 46 kilometers, takes 90 minutes. Once the rains start, trucks often get

stuck. It can take from one to two days to get traffic moving again. Meanwhile, the truck driver and the trader wait with the truck. Surprisingly, the transport rate per bag does not appear to change from season to season.

Smaller transporters quote rates per bag that are set based on destination rather than distance or time of travel. There is rarely any back haul, so any rate given is a return rate based on the transporter travelling in two directions. There are a number of different size trucks that transport commodity: the Toyota Hi-Lux, with a canopy over the bed, known locally as a 'Sahara,' for example, carries two metric tons; the so-called tippers, of various makes, take three to five metric tons. These are the most common vehicles moving products within South Sudan. A few larger trucks, of about 25 metric ton capacity, bring in commodity from Uganda. South Sudan traders generally do not appear to own transport, but hire it as needed.

The transport rate between Yei and Morobo, a journey of approximately 46 kilometers, was quoted by traders using Saharas to be $8.15 per metric ton per kilometer which is 6.5 times higher than the average transport rate for Kenya, Tanzania, and Uganda calculated by a World Bank study in 2009[1]. The marketing farmer group reported that the three to four metric ton tipper truck worked out at a rate of $3.63 per metric ton per kilometer, which is just under 3 times the East African average. It is possible that traders inflated the rate. It is also possible that the limited number of vehicles which serve the market act as a *de facto* cartel and control the price. The number of traders who can afford to hire a whole tipper is not enough to change the market pricing. As long as transport rates in South Sudan continue to be high, the price differences between consuming markets and rural production areas will remain large.

4.0 GREENBELT FARMER GROUPS

4.1 Group Structures

The main reason farmers join groups is to get support in the form of training, storage points, etc. FARM encourages groups to become legal cooperatives as a means toward promoting storage aggregation for which FARM can provide grants. In South Sudan, there are three main group structures: Farmer Based Organizations (FBOs), Cooperatives, and Cooperative Unions.

A. Farmer Based Organizations (FBO)

Farmer Based Organizations have no minimum number of members, but generally not fewer than ten, are based around a group of people with ties within the community. There may or may not be share capital. FBOs should be registered at the county level but often this does not happen.

B. Cooperatives

[1] Eastern Africa: A study of the regional maize market and marketing costs 2009

This is a registered farmer organization with a minimum of 21 members, each of whom has paid a minimum share capital of SSP500 in accordance with South Sudanese law. The cooperative is a formal legal entity with by-laws and a board elected by its members.

C. Cooperative Unions

A cooperative union is an organization made up of a number of cooperatives that come together to work together. Formal by-laws are in place and board members have been elected. Under the law, only registered cooperatives can join a cooperative union; there is no law governing share capital. The main service the union offers to its cooperative members is some sort of market information and flow down of whatever support is available. FARM staff members believe that cooperative unions can be organized into important aggregation centers, which could be a key development in rationalizing FARM's value chains.

4.2 Field Visits

The marketing expert visited four farmer-based organizations (FBOs), two on the Maridi road, Bala and Dumo, and two in Morobo, Gulumbi and Lototek. Bala and Lototek, seemed especially advanced.

4.2.1 Bala

Bala, formed in Lasu Payam in 2012, has 65 members from three FBOs who have paid-up a proportion of the designated share capital (SPP250 per member paid now and a further SPP250 to be paid in November); 75 shares have been issued, a few members having bought two shares). The share capital was used to buy bags of maize at harvest (SSP100/100 kg) and groundnuts when the price was low. When visited, the FBO had 35 bags of mixed commodities in a brick store, more groundnuts than maize. The maize was in relatively good condition, although there were significant portions of odd shaped grains. There was very little insect damage, but live weevils were seen on the outside of some bags along with 'dust' associated with weevils. The consultant noticed some rat-gnawed grains along with a quantity of chaff. Bala employs a store keeper, guard, and cleaner. The group intended to sell the grain over the next four weeks, with the revenue being used to buy honey (SSP100 per jerrycan at honey harvesting time) from honey producers ranging up to 15 miles away off the road. The group planned to hold onto the honey until June or July when honey prices normally go up (est. SSP200 – 250 per jerrycan). Bala possesses a scale, at least two worn tarpaulins, and use a homemade pallet (against the wall negating the rat protection on it) to hold about half their produce off the floor. Approximately 75 percent of the members were reported to have mobile phones. Transport to Yei, 15 miles away, costs SSP150 per bag. Bala managers talk regularly with five traders from Yei.

4.2.2 Lototek

Lototek Cooperative Society in Morobo has been operating for over five years; the 26 members each paid SSP50 to buy shares and four more members had joined over the past several months, giving the group a total share capital of SSP1,100 at the time of the consultant's visit. The members have grown their cash float year after year until it is now SSP 9,497, a return on investment of 25–100% annually. In 2013, Lototek members are expecting a return of about 26% from the first season. Members deposit bagged commodity in the storehouse and use the cash to buy additional bags of commodity from the market at harvest in December when prices are low. They store until April and then sell before the rains. They received a loan from Norwegian Peoples Aid (NPA) to build their current brick storehouse (5mx6m), which they repaid in full (good storehouse, good roof, concrete floor, strong lockable door). At the time of the consultant's visit, they had 64 bags of members' grain and 74 bags of purchased grain. They report that they have used up to 3,450 of their capital to buy this grain (which must be inaccurate since it would mean the average price of a bag was SSP46). They have maize, groundnuts and a couple of bags of finger millet in store. They have in the past taken commodity to Juba to sell; however, these efforts were not profitable. Now they prefer to sell at the store even though they could afford to pay for transport to Yei. They report that hiring a tipper of three to four metric ton capacity costs about SSP1,500 – 2,000, working out at a bag rate of SSP66/ bag or US$3.62 per metric ton per kilometer (see point below). The committee meets once a month to discuss marketing matters. Members who have sudden need for cash can get loans from the cash fund.

4.3 FBO Storage

In the past, 20 meter by 8 meter, 400 metric ton capacity, storerooms were built for some farmer groups by NGOs. These storerooms, which are based on the same model, are well built with solid concrete floors, albeit with small pits in them now; the walls are solid, smooth, and intact. The roofs are intact, but with small holes visible, primarily nail holes. The window openings were originally screened, but these screens are now largely broken or missing. There is a large metal door at one end for loading which no longer closes tightly as the concrete has crumbled around the edges giving easy access to rats. However, most of these storerooms sit empty or with only a few bags of maize. Most of these storerooms probably represent groups which have been around for some time. As group integrity fell apart, so did management of the storerooms.

Farmer groups have also built or hired storerooms at trading points. These are much smaller (5 meters x 6 meters with a capacity of between 20 to 40 metric tons), still with concrete floors, brick and concrete rough walls, and metal roofs, though with easy access for rats around doors, through rafter space, wall surfaces, and odd holes.

There was evidence of grain gnawed and weevil infestation at one store. The store keeper estimates that a 100-kilogram-bag loses about 5 to 6 kilograms over a 4-month storage period, (i.e. approximately 5 percent weight loss, note that a 1 – 2 % weight loss through shrinkage is considered normal). This represents a value of SSP2.7 at harvest price and a potential value loss of SSP4.5 per bag later in the season. At the moment, there are no treatments such as *actellic*, a powdered insecticide effective against weevils, approved in the Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) for grain treatment and widely available in the market throughout East and Central Africa, except evidently South Sudan.

Another storehouse had moth infestation of the maize and the presence of an owl indicating rats. Bagged groundnuts and maize were stored beside each other, more often than not directly on the floor. Even where a pallet was used, it was up against the wall which would reduce airflow and make the metal rat guards it had useless as the rats would easily climb the rough wall and jump down.

Farmers bring their bags to the store, the bags are marked in pen with the farmers name, and then placed with other bags of the commodity. Some stacking was orderly, some was haphazard.

In groups where marketing skills were poor and the grain was just left waiting for the price to come up to the level the farmers wanted (which it never did), farmers reported that there was high degree of insect damage/infestation and what they took back was no longer ”good”. They were not prepared to bring their grain back to be stored in these stores. They thought their own storage was better.

Farmers are storing their grain either in mud-walled, grass-roofed huts, or traditional basket-like structures with grass roofs. The majority of farmers appear to be storing grain at their homes (as verified by the smart phone survey). These structures are easy to construct and therefore can probably be quite quickly added if there is additional harvest. If the grass roof is made properly, it is water tight; however, these structures are easily accessible to rats, and insect infestation would be difficult to see in the dark. Ventilation is limited, which is a problem if grain or cassava chips are put into the stores too wet.

5.0 ISSUES RELATED TO FARMER GROUP DEVELOPMENT

5.1 Numeracy

Lack of numeracy skills among farmer group members complicate the management of marketing. When a large proportion of farmers struggle to count their bags, let alone work out the costs of production, they cannot calculate how much commodity they have to sell or how many bags they may need for household consumption. Lack of numeracy also means it is expedient to set a price that is:

- High, therefore, popular with the members;
- Identical to the price of the same commodity imported through or from Uganda;
- Not related to the cost of production but, rather, to prevailing market prices;

Such pricing does not reflect reduced costs of production through improved productivity, may or may not be covering costs, and may or may not be profitable.

5.2 Land Availability

In terms of production, Greenbelt farmers appear to split their land into two functions. Certain fields, often near their house and road, are set aside for subsistence. On these fields, usually about two feddans in area, family members work to produce enough food to feed the family for the season or year. Other fields, often farther away from house and road, are reserved for cash crop farming. For smallholder cash crop farming, many farmers prefer to hire laborers to do the heavy time-consuming work while family members work the subsistence fields.

There seems to be no shortage of land in the Greenbelt. Farmers use slash and burn cultivation. Land is cleared, the trees are cut down and uprooted, and often the wood is processed into charcoal to offset land clearance costs. In the first year, maize is planted in both seasons; the second year, cassava and groundnuts are planted in both seasons; and then the farmer continues with cassava for the next two years or so, slowly harvesting the cassava as he needs it. The farmer then moves on to clear new plots of virgin land. When moving back from time to time to a cleared plot after a few years of fallow, the cost of clearing the land is much less.

It is important not to include the total cost of land clearing in the first season's production; clearing costs should be spread over the entire production life of the plot until it is left fallow. Farmers agree that the cost of clearing one feddan of land in Central Equatoria is about SSP500. If the cleared land is used for about 4 years, the cost is SSP125 per year, or SSP63 per season. Looking at the first year of maize production, with a yield of 750 kilograms per feddan, the costs of land clearing account for SSP0.08 per kilogram of maize produced.

5.3 Labor

The labor issue is complicated. It appears that in many households, particularly headed by older people, the young adults have gone off to find work in cities and the parents are incapable of planting land in addition to what they prepare for subsistence needs. There are other households where there is sufficient labor to carry out some or all of the work. Children of school age are essential for helping with some of the lighter weeding and harvesting tasks. There are also households with enough cash to hire labor to clear and plant additional land. Finally, additional help is provided through church groups. When the younger members of a church group move from farm to farm to help prepare land and sometimes harvest crop, this help is paid for with meals: a goat and/or chickens are killed and provided as a meal with maize, sorghum and cassava posho.

It is very hard to calculate the “real” cost of such labor. Outside labor is paid in cash; laborers are paid by piece work. For instance, if five people are hired to plough a feddan of land and it

takes them five days, they will likely be paid anything between SSP230 and SSP400 which roughly translates to a daily wage of between $2.50 and $4.00. Weeding costs seem disproportionately high, perhaps $7.00 to $10.00 per day per laborer. One theory to explain the high cost of weeding is that the majority of laborers leave an area after finishing the plowing and harrowing since there is no agricultural work for the next month or so and therefore the competition to get labor at weeding time pushes the price up. However, without an assessment on the dynamics of this labor market to determine how much it contributes to the continued production and cost of planting cleared land and how much it contributes to opening up new land, it is impossible to say how important weeding will be in achieving greater land utilization and how much it contributes to the cost of production.

At a minimum, family labor is used for planting on the land cultivated for cash, harvesting and, to a degree, threshing.

Estimated Cost of Production For a Feddan of Commercial Maize From The Bala Group

Activity	Fee (In SSP)	Days taken	Number of people	Cost SSP per person	Comments
Plowing	400	5	5	16	Hired labor used for land cultivated for cash
Harrowing	200	4	5	10	Hired labor used for land cultivated for cash
Planting	100	1	8	12.5	Church group labor, family and friends, payment in the form of a meal goat (200) 2 chicken (100)
1 Weeding	200	1	5	40	Hired labor, family, children on weekends
2 Weeding	150	1	5	30	Hired labor, family, children on weekends
Harvesting	20	6	2		Church group labor, family and friends, payment in the form 3 kg beans cooked up with carbohydrate
Threshing		5	5		Family - takes 5 days to thresh cobs to get 15 bags of maize
Drying		5 to 7			Family (take in and out of cover at night)
Marketing	375				Bag, moving to the market or the store - bags move by bikes SSP 2 - 3 each. Can take a couple of days to move all bags. Each market visit takes a day
Total Cost	**1,570**				

The overall cost per 100-kg bag is SSP104.67 yielding a cost of SSP1.05 per kilogram. This group reported that their yield was about 1,500 kg per feddan, which is very high. At harvest, the price per 100-kilogram bag is around SSP90 - 100. Another FBO estimated their costs at twice the amount in the above table. Their yields were about half of the Bala Cooperative Society at 750kg per feddan.

No farmers reported buying seed, or the only input that was purchased was labor.

Farmers exposed to training on proper agricultural techniques are significantly increasing the yield of all crops. Farmers are now producing some surpluses on the food security land which is also available for sale. Growing maize requires the least labor per feddan and cassava the most,

although when cassava is used for immediate consumption there is no labor for drying. If rural consumption of maize is estimated at 185 kilograms per person per year, and this is considered "payment" for labor on the land based on an approximate value of SSP1 per kilogram of maize at harvest, the family member working on the land was compensated at a rate of approximately SSP8.8 ($2.88) per day, compared to SSP2.56 ($0.84) per day for cassava and SSP 1.29 ($0.43) per day for groundnuts.

Aggregate Labor Required To Plant A Feddan In Maize, Groundnuts And Cassava

Activity per fed/acre	Total labor days*		
	Maize	**Groundnuts**	**Cassava**
Planting	8	20	4
1st weeding	20	12	12
2nd weeding	12	16	12
Harvesting	8	40	24
Collecting/ transport to house	4	4	4
Drying	12	12	
Shelling/processing	20	20	8
Chipping			8
Drying			28
Total labor days	**84**	**124**	**100**

* Assumes 4 people for labor for 2 days or a total of 9 labor days.

5.4 Joint Storage

At the FBO level where close links exist between members, aggregated storage can be organized because the members know and trust the individuals managing the store. It is less clear whether a member who does not know the store manager well would be willing to place his or her grain in the store. It is important to remember that grain is equivalent to salary, and group storage is the same as putting one's salary into a pot and asking an individual to look after it. As a project working with a storage point, it is important to work out whether different groups have trust in the individuals managing the storage points. Where there is limited trust, the project should suggest starting with smaller quantities in the group store and building these quantities up over time once the store manager is found to be reliable. The distance different groups are from the store will also determine whether they will use it or not. If the local market is closer than the store, it may be more cost effective for the farmers to sell in the local market than move their grain to a distant store.

5.5 Designated Store Keepers

The store manager should be trained in how to look after store commodity. In particular:

- How to identify quality suitable for storing;
- How to clean commodity prior to storage;
- How to keep store records;
- What to check for in the store for signs of infestation;
- How often to check the store;

- What to do if store infestation is discovered, tailored to the materials available in the market;
- How to see if agro-dealers would be interested in bringing in insecticides that have been approved in the PERSUAP.

ACDI/VOCA has developed a crop conditioning manual which is easy to understand and can be used as additional training material. The storage manual is for high level storage.

http://www.acdivoca.org/site/Lookup/CropConditioningHandbook/$file/CropConditioningHandbook.pdf>http://www.acdivoca.org/site/Lookup/CropConditioningHandbook/$file/CropConditioningHandbook.pdf

http://www.acdivoca.org/site/Lookup/StorageHandbook/$file/StorageHandbook.pdf>http://www.acdivoca.org/site/Lookup/StorageHandbook/$file/StorageHandbook.pdf

Suggested Project Actions:

- Work with groups to identify store managers;
- Train store managers in basic storage techniques;
- Liaise with production people to make sure that they are covering post-harvest handling of the crops to be stored.

5.6 Designated Marketing Manager and Store Keepers

Marketing is a skill which takes time to build up. Tegemeo/MSU compares data sets in Kenya showing that marketing training improved farmer income by 9.9% compared to those who were untrained. MSU has shown that within the same village there is a wide range of prices that farmers receive from the market even when selling at the same time. Some farmers are simply better at negotiating with traders.

FBOs should identify one or two enterprising people from their membership to be marketing managers. These people need to have an interest in following the market and negotiating with traders. These market managers, who can also be combined with the store managers, should be trained in how to watch the market, (i.e. record prices), look for trends, watch for signs of changing prices, and learn how to build up profitable relationships with traders etc. They should work with members to develop a marketing plan and should be present at every marketing meeting which, at a minimum, should be held once a month prior to planning to sell, and weekly once selling starts.

Suggested Project Actions:

- Work with groups to identify marketing manager;
- Train marketing managed in marketing basics;
- Regularly meet with marketing manager to discuss marketing plans;
- Attend group marketing meetings twice a season to help guide the marketing manager and the group to work through their marketing plan.

5.7 Market Information, Telephone Ownership, and Reading Ability

Farmers generally gather market price information by visiting the market, talking to neighbors, and calling a relative in the local town. Traders equally call contacts in local markets, or towns. For information on Ugandan prices traders call their children or friends and ask them to check the retail prices. The South Sudan traders outside of Juba do not routinely check Ugandan prices, though they all report being affected by the prices. Juba traders of Uganda products do check Ugandan prices once a week or so.

In the groups visited, phone ownership was quite common; however, only 25% who own a phone would want to read SMS information. Approximately 80% of the population is illiterate making widespread use of SMS messaging a challenge.

Juba traders would source some market information from SMS services though they would want a system which draws the cost out of the credit balance they have on their phone.

5.8 Selecting Market Ready Groups

For the project to be effective in improving marketing in groups in South Sudan, it must carefully deploy its resources looking for significant impact on those groups who are ready to market sensibly. The project covers a wide area and would be well advised to identify one or two key productive areas on a trading corridor feeding into a main urban center. Within the identified area, the project should identify groups, like Bala, which are already successfully marketing and then groups which appear to be market ready, but may not have started marketing activities.

Criteria to assess whether groups are market ready:

- Good governance structure and business orientation;
- Suitable storage facility – water tight roof, lockable door, accessible to most members;
- Significant number of members interested in group storage, willing to put their grain into group store, and participate in group selling (ie at least 20 members ready to bulk one bag each);
- Members paid up in share capital.

The aim is to identify 5 - 7 market ready groups relatively close to each other and work with them to create marketing plans, record keeping and market research, trader links etc.

6.0 MARKETING

6.1 Traders

In 2009, the *Cross Border Trade: Funding Conflict or Building Peace* report identified 3 main groups of wholesale traders dealing in agricultural commodities:

- South Sudanese traders with long established presence of over 10 years;
- Kampala-based traders;
- Northern Uganda traders.

Since that report came out, a new category of traders has appeared on the scene: young people trying to grow their capital so they can move on to other endeavors. These young South Sudanese traders are likely to go to Uganda to purchase food commodities that they transport to Juba and sell themselves, just as the Uganda traders do.

Traders hire various size trucks, depending on the markets being served, to move their commodity which is unloaded into hired warehouses in trading towns. Turnover of stock is fairly slow. Traders say that 25 metric ton of Ugandan commodity, that is, more or less, the minimum quantity of maize, groundnuts, eggs, etc. that a trader brings, can take a month to sell. It might take one to two weeks to sell 20 bags of local maize. There is no particular preference for Ugandan commodity; rather, the preference is for better quality produce over poorer quality. Therefore, if South Sudanese commodities meet the same standards as Ugandan products, they will sell equally well in a market where the price is the same.

However, it appears that most traders operate in small trading corridors where they know where to source the commodity at one end and at the other end they have a warehouse that will allow them to slowly sell the commodity into the market. They do not appear to move impulsively into other markets. They say they lack contacts in different markets. Traders interviewed asked the project to help make linkages with traders in other centers in South Sudan. Where there is no family member who can be called to verify market prices, etc., it can be hard to know whether it is really worth loading commodity onto expensive transport, hoping that, at the end of a bad road, there will be a willing buyer with enough money to pay for the commodity.

The capital that traders work with is limited. They buy the number of bags their capital allows. They do not re-enter the market until they have sold most of their stock. They sell their stock to smaller traders in the market, by bag, or directly to consumers, by basin or bucket. They compete with farmers bringing commodity into the market place.

The implication of the limited number of traders and their limited capital is that as production increases and larger volumes move onto the market at the same time, traders may not have enough cash on hand to buy it. This means that farmers may have to reduce their prices in order to sell onto the market. Regardless of the cash on hand, traders reacting to the supply volumes on the market will also reduce their prices.

6.2 Marketing Strategies

There are five main marketing strategies open to farmers and farmer groups:

- To sell at harvest, either at farm gate or closest local market;
- To move commodity to further markets to try to capture some of the profit margins traders earn;
- To delay sales and sell later in the season, either locally or in more distant markets, after speculating on potential increased prices;
- To aggregate commodity with other farmers and negotiate bulk volume sales to traders;
- To process commodity into a higher value product.

Currently the primary push to sell grain at harvest is to pay school fees. One bag of maize can put two children into primary school in South Sudan or one child into secondary school. More ambitious parents send their children to Uganda for schooling, which requires more cash. They also sell small quantities, one or two bags, to meet cash needs. Remaining bags are kept for land preparation for the next season or, depending on the time of year, more school fees. Farmers sell the grain reserved for land preparation just prior to the planting season. For the first season, they sell during March or April.

6.2.1 Local Sales

Every town in South Sudan has a market that is open one or two days a week. Local traders hitch rides out on market day, buy goods from the farmers coming into the market, and then pay transport on the Sahara back to their market towns. The more volumes that come into the market on any one day, the more the traders try to push prices down.

6.2.2 Aggregated Sales

Passing through the market may bring additional costs as compared to buying directly from the store. As farmers bring their commodity to the market, their commodity must enter into the market, and then it leaves the market and is loaded onto trucks. Market places have mandated fees that should be charged. For instance, in the Yei market the Town Council receives SSP2 per bag and the Chamber of Commerce SSP10 per bag. There may also be a ground fee. It is unlikely that these fees are being collected properly so in actual fact the costs may be less or nonexistent. Additionally, there may be loading fees, charged by someone who carries the bag from the market to the truck. These fees seem to range from SSP2 to an astonishing SSP10 per bag. If all or any of these fees are being collected there is a financial advantage to buying from the store. Furthermore, if the loading fees are charged in the markets, then depending on the price being offered, the store could charge a reasonable loading fee (in East Africa this ranges from about $0.10 per bag to about $0.40 per bag depending on whether its informal or formal trade) to load the traders' transport. It is more likely that aggregate sales direct to traders will work when the volume of grain on the market is low. It is unlikely that aggregate sales will get a higher price than the market price unless taxes are really being collected in the markets. This needs further investigation.

It is possible that traders could save considerably by doubling up on transport and instead of using two Saharas at SSP150 per bag for 40 bags, they could use a tipper also for 40 bags but at possibly less than half the rate. FARM should investigate this option at the trader meetings.

From a farmer's point of view, selling eight bags in the market generally means eight trips to the market, whereas moving all the bags to a group store can probably be done in one or two days. This cuts down on time and costs since the farmer will probably have a drink or a meal with friends if he or she goes to the market.

6.2.3 More Distant Sales

There is no doubt that most of the time, traders make a profit moving commodity from one market to another. However, these traders have storehouses in the more distant markets where they can off-load the commodity. They then sit selling the commodity out of these storehouses day by day. An FBO which transports commodity to a new market has no store house and no customer base; it is at the mercy of anyone who knows they have a large number of bags and nowhere to put them and no one to buy them. If the FBO does have storage, they will still have to sit with their bags selling them day by day, incurring hotel and food costs in the meantime.

6.2.4 Processed Value Addition

Converting maize into posho at the local hammer mill creates a product that normally, in East African markets, has only a seven to ten day shelf life. Only roller-milled maize meal, sold in packets, has a long shelf life and this product is only produced by a few mills in South Sudan. Most of the maize moving through the markets in South Sudan is sold to customers who walk to a hammer mill and process it as they need to eat it.

While groundnuts are processed into paste, in Juba the paste market now appears saturated with many women sitting and selling two sizes of plastic bags of ground nut paste. They all report that sales are very slow. The well-off urban households have house help whose job it is to grind the basin or bucket of groundnuts into paste which can then be stored for one to three months. The less well-off buy once or twice a week, or when they suddenly have enough cash.

While cassava flour is popular in rural areas, it is not that common as a marketed food stuff. While profits appear to be good in the cassava chip and flour trade, it might simply be that because it moves slowly volumes are low and traders put a higher mark-up on it to reflect this.

6.2.5 Trader Cooperative Meetings

The FARM Project plans to continue to build on the farmer trader *fora* reinforcing market messages to the FBOs through the traders, demonstrating to the traders the savings that can be earned through buying from a group which includes such advantages as no market taxes and reduced loading costs. FARM will encourage regular phone contact between group market managers and local traders.

Two groups, Bala and Lokotek, already have excellent marketing strategies. Introducing key members from the new-market ready groups to these two organizations to learn the lessons they have already learned will provide insights to market ready groups and should demonstrate what is possible.

Suggested Project Actions:
Bring marketing managers, group chairmen, and one or two others to meet with groups who are already marketing successfully. Two groups can probably visit at one time making sure there is enough time for everyone to chat about farming, marketing, and other related topics.

6.2.6 Market Linkages for Traders

As project staff move from Yambio, Maridi, Yei, Juba, Torit, and other locations, The FARM Project is building up a network of traders in these different areas. We should work to introduce these traders to each other so they can build linkages outside of their known market corridors. While meeting face-to-face is the best way to build linkages, the project could also arrange times where a computer is set up in two towns to accommodate a skype between the two locations. For the most part, project staff would not need to participate in the call and possibly would not even need to be present.

Suggested Project Action:
Arrange meetings between traders from one market to another to talk and share contacts.

6.2.7 Warehouse Receipts

South Sudanese farmers already appear to speculate that market prices will increase over time. They put aside between 50% and 75% of their stock for delayed sales. Since the costs of production were financed with cash, it is less imperative to sell at harvest than it is for other farmers in East and Southern Africa who have likely taken out production loans from family, friends, and financial institutions. Most South Sudan farmers store their commodity at their homes, entailing minimal storage costs.

Should farmers wish to borrow money for warehousing grain, a micro-finance organization would want to at the very least supervise the deposit of the commodity and then lock the door of the store with two padlocks. The micro-finance organization would hold one key and the farmer group the other key. Commodity in the store needs to be supervised whether weekly or every two weeks (optimally daily) and the micro-finance officer would need to come to the store to open the door so the commodity could be checked. If the commodity needs treatment, the micro-finance officer would need to be present during whatever treatment was deemed necessary. If the cost of 100 kilograms at harvest is around SSP100, then a careful micro-finance organization would offer a loan at 60% of the commodity price at harvest; that is, SSP60 per bag. Micro-finance lending rates appear to be around 3.5% per month. If commodity entered into the store in December and was sold in April, the finance charges would run over four to five months, a cost of between SSP6 and SSP11 per bag. The warehouse would also need to charge fees to cover storage costs, handling in and out, fumigation, etc. at a minimum. This fee should be anticipated at SSP4 per month, or between SSP16 and SSP20 per bag. The micro-finance organization and the storage operator will never lose; they will always be paid interest and storage fees. If the costs are not met, they will sell the commodity into the market and take their costs out of the sale price.

The question is whether it is worth the risk for a small holder farmer to invest between SSP22 and SSP31 per bag in hopes of getting an additional SSP28 to SSP58 per bag, or whether he would be better off just keeping the grain on his farms and speculating from there with little additional cost.

Given that many farmers struggle to calculate their costs of production, asking them to take on a complex set of tasks involving the calculation of interest charges and storage charges with the potential of a micro-finance organization selling their commodity out from under them if market prices move the wrong way seems an overly ambitious marketing strategy with farmer groups. This would be particularly challenging for South Sudanese farmers who are only just ready to start group marketing.

At this point in time, with the nascent nature of farmer groups and cooperatives, I would strongly recommend not trying to start warehouse receipt systems which, in their nature, are complicated, expensive, and require strong marketing knowledge to work.

6.2.8 Currency Issues

A significant constraint to trade of commodities in South Sudan is the large denomination of the smallest note, the one Sudanese Pound, SSP1 has a value on the black market of approximately US$0.25. Such an inflexible currency situation supports the volumetric calculation of price because it is easier to adjust the price realistically over 10 kg of commodity where a change of SSP1 per basin is the equivalent of SSP0.1 per kilogram (US$0.03) than per kg where it is impossible to pay someone 2.4 or 2.6 SSP per kilogram. This is further complicated by the lack of numeracy for most of the population. SSP14 for 8 kilogram of a commodity is impossible to work out and therefore the person negotiating has no idea whether the answer is true or someone is taking advantage of them.

7.0 INTERVENTION POINTS

7.1 Scales

As previously noted, transactions are worked out by volume, bucket, basin, or bag. The use of hanging scales is limited though a number of scales were seen at outlets. While the volume of a basin has an assumed weight: maize is 10 kilograms and groundnuts are approximately 7.5 kilograms, weights are highly variable since:

- There is no standard bucket or basin;
- Weight depends on how the commodity is piled in the container;
- Weights change in the course of the season as moisture is lost; a basin of maize at harvest does not weigh the same as a basin of maize 4 months after harvest.

The project is considering the introduction of scales to a number of cooperatives. This would be an excellent step forward in formalizing trade. The following points need to be considered in selecting the model to be procured:

- Effort required to operate;
- Storage consideration;
- Robustness;

- Calibration.

There are two different scales widely available in East Africa, the hanging scale and the platform scale. The hanging scale is suspended by a rope from an overhead beam or branch. The bag of commodity, weighing up to 100 kilogram, is lifted up by two people and hung on the arm of the scale, the weight being recorded as the bag pulls the arm of the scale down. The hanging scale has serious drawbacks related to its design. Generally when a bag is lifted up and hung on the arm, the bag is not let down slowly on the arm but dropped abruptly putting undue force onto the internal spring. Hanging scales come in small carrying sizes, one to ten kg, and larger carrying weights such as 50, 100, and 200 kilograms. They are made of either plastic or glass. They are fairly fragile unless looked after carefully, breaking easily and quickly losing accuracy. Hanging scales are cheap, about $25 to $50 each.

Platform scales are more robust and heavier pieces of equipment. Rather than a weight being easily read off the face of a meter, the scale operator adds weight to the arm until it balances. These scales come in 200, 300, and 500 kilogram versions but are more expensive than hanging scales.

A scale's tare weight is the weight the spring inside is able to accurately weigh without distortion. Any weight that is put on a scale that is more than the tare weight of the scale distorts the spring and therefore makes the scale less accurate. The hanging scales are particularly prone to distortion since weight (particularly heavy weights) are rarely eased onto the scale, but dropped, stretching the spring beyond its recovery capacity.

All scales lose calibration over time and therefore needing periodic recalibration. This is normally done by an experienced technician, associated with a governmental regulatory office, who comes with known weights, tests the scale, recalibrates, and certifies it. A hanging scale should be recalibrated at least every six months, depending on use, and platform scales annually.

A solar calculator should be included with each scale with laminated instructions on the back explaining how to calculate “kilograms x price per kilogram = total price” and how to convert price per basin to price per kilogram. At the beginning of a sale, using platform scales, farmers and traders alike could weigh the basin filled with commodity so farmers can see how the price per kg relates to the price being offered in the local market.

If scales were included at the market, the scale operator could also calculate the value per weight of commodity weighed for each user as an added service.

Suggested Project Actions:

- Procure scales, re calibrate scales;

- Train cooperative store managers in scale use;
- Attach simple laminated sheets to each scale showing how scale is used and how "weight times price = total price" for the weight, and how to calculate a basin of commodity and arrive at a per kg price;
- Demonstrate scale use to cooperative/group members;
- Identify a market where government is willing to invest, even if it is only time and a commitment to market place development;
- Train market administrator in scale use;
- Support market administrator in scale use for first few months.

7.2 Recommendation Concerning Oxen

Use of oxen for plowing significantly reduces the costs of production, the number of people needed to work the land, and the time needed to prepare each feddan. Working with effective FBOs, FARM could introduce oxen as a shared resource and train people how to look after them throughout the year, train the oxen to plow, and plow using oxen. The oxen would be hired out as a fee-based service offered by the cooperative to its members. Members would have to sort out a map of where the fields are, and then arrange a calendar for effective plowng service.

7.3 Recommendation Concerning Maize Threshing

In high production areas in Kenya, all farmers, small and large, employ mechanical shellers to come and shell the maize. The sheller is brought to the farm on a pick-up truck. The farmer generally employs three people for the day at $1.75 per person per day to take the cobs from the store and place them in sacks. The sheller operator comes in with six to eight of his own workers; two people putting the grain into the shelling machine are paid $2.35 each per day, and the other workers are paid $1.75 per day. The sheller operator also charges $0.60 per 90 kilogram bag of shelled grain (basically two bags of cobs makes one bag of grain).

At the moment, farmers in South Sudan shell by hand the maize that they want to keep for seed, and then thresh the bags of cobs with sticks for the balance. They estimate that it takes about five people approximately five days to thresh the cobs to get fifteen bags of maize grains.

While it seems impossible to continue to increase production of maize and thresh the output by hand, the project needs to sit down with cooperative members and see whether they are willing to pay for this service, what the labor costs might be in South Sudan, how the sheller would be moved from farm to farm (for example: oxen pulling a cart), and whether farmers would be willing to walk cobs to a central point to be threshed.

It would make sense to start this with one or two groups and work out the problems before introducing it widely throughout FARM groups.

8.0 RECORD KEEPING AND MARKET RESEARCH

The project should start working with all marketing coops and groups to understand the importance of record keeping for marketing. This is where the marketing manager records, weekly or monthly, the price of relevant commodities in the local market and the transport rate to the larger urban market. It is important that the marketing manager collects the wholesale price (i.e. the price the traders are buying from the market), price per bag/basin, rather than the retail price where women are selling small quantities. The point of recording the prices regularly is so the group can look at price trends. Which months do the prices go up? Which months are the prices low? And, do prices vary from year to year? Already a number of groups have worked out that prices at harvest in November and December are low and that after the first of the year prices go up until April. After April, prices seem more unstable in the rural areas. This could reflect that rains start around April and the ability to easily move along the roads diminishes. While prices may be highest in Juba in June, getting to the Juba market in time to capitalize on these higher prices may not be possible.

Example of Market Price Records

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Crop Cycle	Harvest		School	Planting		School	Harvest	Harvest Planting	Harvest / School			Harvest
Price per Basin	10	11	14	15	15	17	17	13	12	12	12	10
Difference		.+1	.+3	.+1	0	.+2	0	-4	-1	0	0	-2

On top of this, the marketing manager could record:

- Transport prices and whether they change;
- The number of traders present in the market;
- The number of farmers in the market; and,
- The price in next nearest market.

Slowly learning how to build this information up into a picture of the different forces affecting the marketing of commodities is a long-term activity that will take a number of years to effectively achieve.

Suggested Project Actions:

Train marketing managers:

- To keep wholesale price records in nearest market and any other market connected to their market;
- To use market information;
- To negotiate the best sales price.

9.0 COSTS OF PRODUCTION

9.1 Maize

Cost Breakdown For Maize Using Project Records

Category Maize Farming	Family Labor	Hired Labor	Oxen
Plowing	400	400	150
Harrowing	200	200	105
Seeds and Fertilizer			
Planting	64	100	100
1st Weeding	160	200	200
2nd Weeding	96	150	150
Harvesting	96	20	20
Threshing, Cleaning, Drying	256	256	256
Sacks	60	60	60
Total Farm Cost	1,332	1,386	1,041
Yield	1,500	1,500	1,500
Cost per Kilogram	0.89	0.92	0.69

Note: At the moment, no payment is made for improved input. Farmers are being advised to replace seed every three seasons. For family labor, the value of maize is based on 85 kilograms per person per year to input a plough using the oxen labor rate.

Profit And Loss Scenarios for Maize Based On Different Production Yields Using Same Cost Data

Category Maize	Yield Scenario	Family Labor	Hired Labor	Oxen
Yield kg/Feddan	**1,200**			
Cost of Production		1.11	1.16	0.87
Profit/Loss If Sell at Harvest / Kg	0.95	(0.16	(0.21)	0.08
Percent Profit or Loss		(14)	(18)	10
Profit or Loss Sale April	1.3	0.19	0.15	0.43
Percent Profit or Loss		17	13	50
Yield kg/Feddan	**1,500**			
Cost of Production		0.89	0.92	0.69
Profit/loss if Sell at Harvest / kg	0.95	0.06	0.03	0.26
Percent Profit		7	3	37
Profit or Loss Sale during April	1.3	0.41	0.38	0.61
Percent Profit		46	41	87

As yields improve, even the more expensive production methods become profitable at harvest. Traders appear to be making around 13% profit, based on project data. Farmers make money on

speculating that prices will go up later in the season. As long as South Sudan is deficient in maize, this is probably a reasonable assumption.

9.2 Groundnuts

Cost Breakdown For Groundnuts Using Project Records

Groundnuts	Family Labor SSP8/Day	Family Labor SSP1.3/Day	Oxen
Plowing	340	400	150
Harrowing	260	200	105
Seeds	30	30	30
Planting	64	10.4	64
Planting Family	160	26	160
1st Weeding	80	80	80
1st Weeding Family	192	31	192
2nd Weeding family	32	32	32
Harvesting	75	75	75
Harvesting + Collecting Family	320	52	320
Threshing/Cleaning/Drying	128	21	128
Sacks	50	50	50
Total Costs	1,731	1,007	1,386
Expected Yield	450	450	450
Cost at Farm per Kilogram (SSP)	**3.85**	**2.24**	**3.08**

Note: Family labor has been valued at the same rate as maize, SSP8/day. If this is reduced to an assumed consumption rate per person, then the labor cost is SSP1.3 per person per day. If the cost of family labor is removed completely, then the cost of production drops to 2.07 per kilogram.

It appears, but needs confirmation, that only small amounts of hired labor are used and laborers are generally paid in kind in forms such as salt, food, alcohol, etc. The hired labor works alongside the family.

Profit And Loss Scenarios for Groundnuts Based On Different Production Yields Using Same Cost Data

Category Groundnuts	Yield/ Profit	Family Labor SSP8/ Day	Family Labor SSP1.3/ Day	Oxen
Yield	450			
Cost of production		3.85	2.24	3.08
Profit/loss if sell at harvest/kg	2.15	(1.70)	(0.09)	(0.93)
Percent profit		(44)	(4)	(30)
Profit of loss sale April	3.5	(0.35)	1.26	0.42
percent profit		(9)	56	14

Notes: Traders' returns, based on project data, appear to be between five and seven percent. The use of oxen appears to increase the profitability of the crop. Family labor has been costed at the consumption value of the crop consumed by family members. They would make a small loss selling at harvest but make a significant profit if they speculate and delay sales as long as the prices in the market continue to go up over time. The above costing has used improved groundnut yields. This does not necessarily mean that at the subsistence level farmers should stop growing groundnuts since it is important for nutrition and there is no alternative labor for them to obtain this food source.

9.3 Cassava

Cost Breakdown For Cassava Using Project Records

Cassava	Family Labor SSP8/ Day	Family Labor SSP2.6/ Day	Oxen
Plowing	340	340	150
Harrowing	260	260	105
Cuttings (50kg/Bag)*	150	150	150
Planting	32	10.4	32
1st Weeding	96	31.2	96
2nd Weeding	96	31.2	96
3rd Weeding	0	0	0
Harvesting	192	62.4	192
Processing	64	20.8	64
Chipping	64	20.8	64
Drying	224	72.8	224
Sacks	150	150	150
Total Costs	1,668	1,149.6	1,323
Expected Yield	2,100	2,100	2,100
Cost at Farm per Kilogram	0.79	0.55	0.63

Note: Converting fresh cassava to chipped cassava at 35 percent of fresh weight.

Profit And Loss Scenarios for Cassava Based On Different Production Yields Using Same Cost Data

Category Cassava	SSP	Family Labor SSP8/ day	Family Labor SSP2.6/ day	Oxen
Yield	**2,100**			
Cost of Production		0.79	0.55	0.63
Profit/Loss if sold at Harvest / kg	1	0.21	0.45	0.37
Percent Profit		26%	83%	59%
Profit of loss sale April	1.2	0.41	0.65	0.57
Percent Profit		51%	119%	90%
Yield	**2,800**			
Cost of Production		0.60	0.41	0.47
Profit/Loss if sold at Harvest / kg	1	0.40	0.59	0.53
Percent Profit		68%	144%	112%
Profit of loss sale April	1.2	0.60	0.79	0.73
Percent Profit		101%	192%	154%

Note: Assumptions about harvest and sales prices in April were based on project data. Based on estimated consumption of 100 kilograms of chipped cassava per person per year, the family labor rate based on annual consumption is SSP2.6; however, the family probably eats a lot of fresh cassava, which would increase this labor rate. Based on project data, traders are making an estimated 40 – 50% return as well.

10.0 URBAN CONSUMPTION

There is an absolute dearth of consumption data. Data collected from a small number of FARM Juba office workers indicates the following:

Maize Flour	60 kilograms per person per year
Groundnuts	14 kilograms per person per year
Cassava Flour	10 kilograms per person per year
Wheat Flour	6 kilograms per person per year
Rice	1 kilogram per person per year

Additionally, a significant amount of cassava, sweet potato, and Irish potatoes can considerably add to carbohydrate intake. Bread is also eaten in large quantities, about three rolls per person for breakfast and lunch daily.

The total population of South Sudan is estimated at 10.6 million (CIA Fact Book 2012 est.) and the urban population is estimated at 22 percent (Ibid; 2009 est.). This roughly means that urban consumption of maize is approximately 130,000 metric tons, cassava is approximately 20,000 metric tons, and groundnuts are approximately 33,000 metric tons per year. Occasionally, perhaps 20 percent of the time, cassava flour, and sometimes wheat flour, is mixed with maize flour to improve the taste (cassava to maize ratio 1:2; wheat to maize ratio 4:25). Groundnuts are bought in buckets or basins and ground into a paste that remains edible for up to three months.

Overall, in marketing terms, the volumes turning over in urban markets are small; urban markets are handling about 380 metric tons of maize per day. Traders claim it can take up to a month to clear 20 - 25 metric tons of Ugandan maize through their stores.

Farmers estimate that they consume one 100 kilogram bag of cassava chips per person per year; FARM staff estimate farmers consume about 185 kilograms of maize per person per year.

In terms of directing agricultural policy, the South Sudan government needs to undertake a household consumption survey, including substitution data, to understand better the opportunities and constraints in the market.